Fig 1

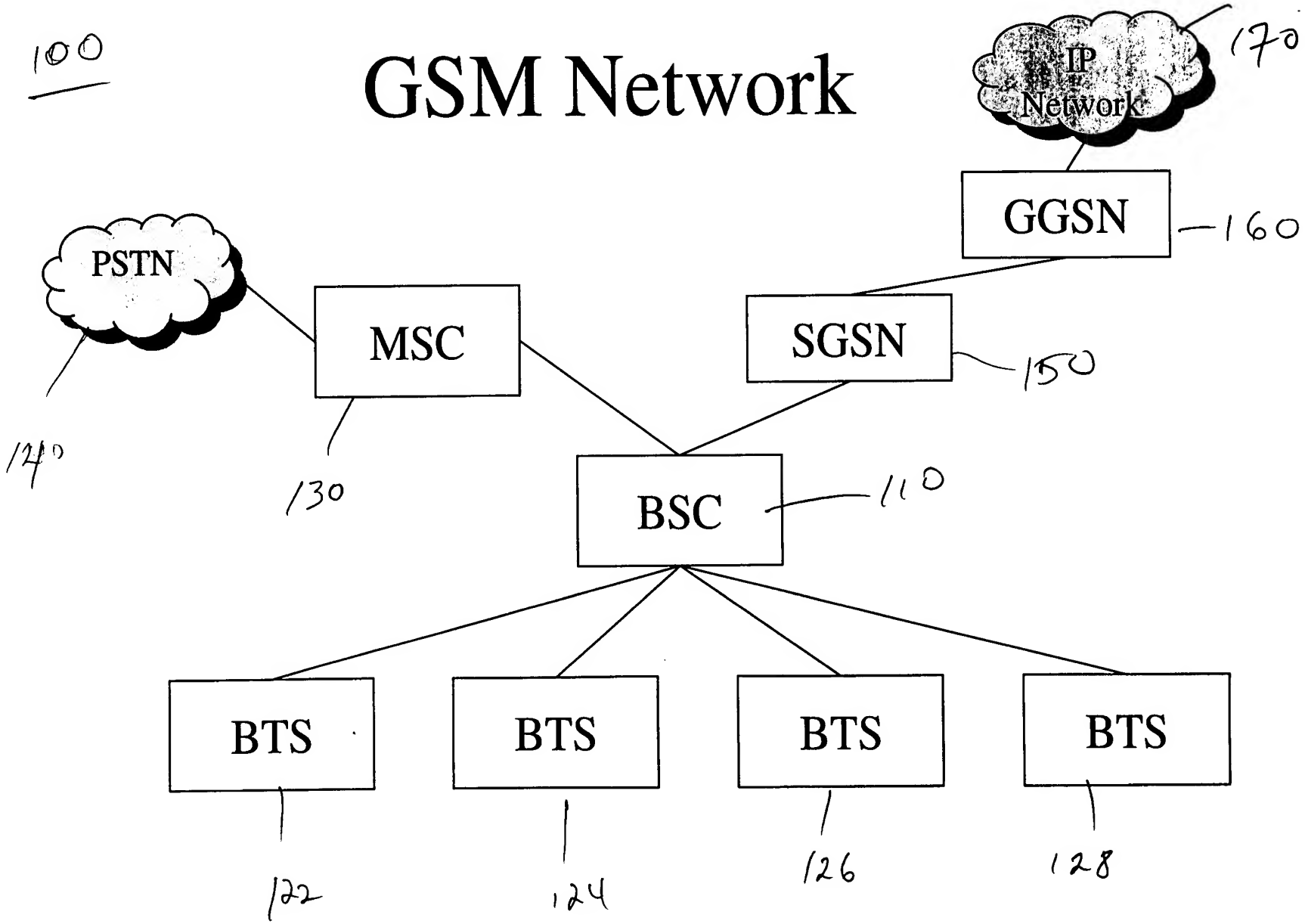
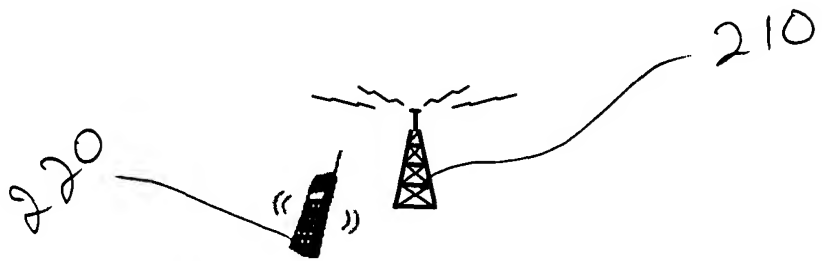

100
GSM Network
IP Network
170
GGSN
160
PSTN
MSC
SGSN
150
140
130
BSC
110
BTS
BTS
BTS
BTS
122
124
126
128

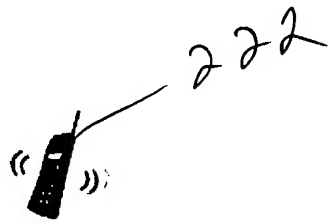
FIG 2

Timing Advance

- Used to insure TDM frame is received at the BTS at the correct time



A MS next to the cell site has zero timing advance



A MS at the edge of the cell has the highest advance for that cell

–MS starts transmission earlier to overcome the propagation delay

FIG 3

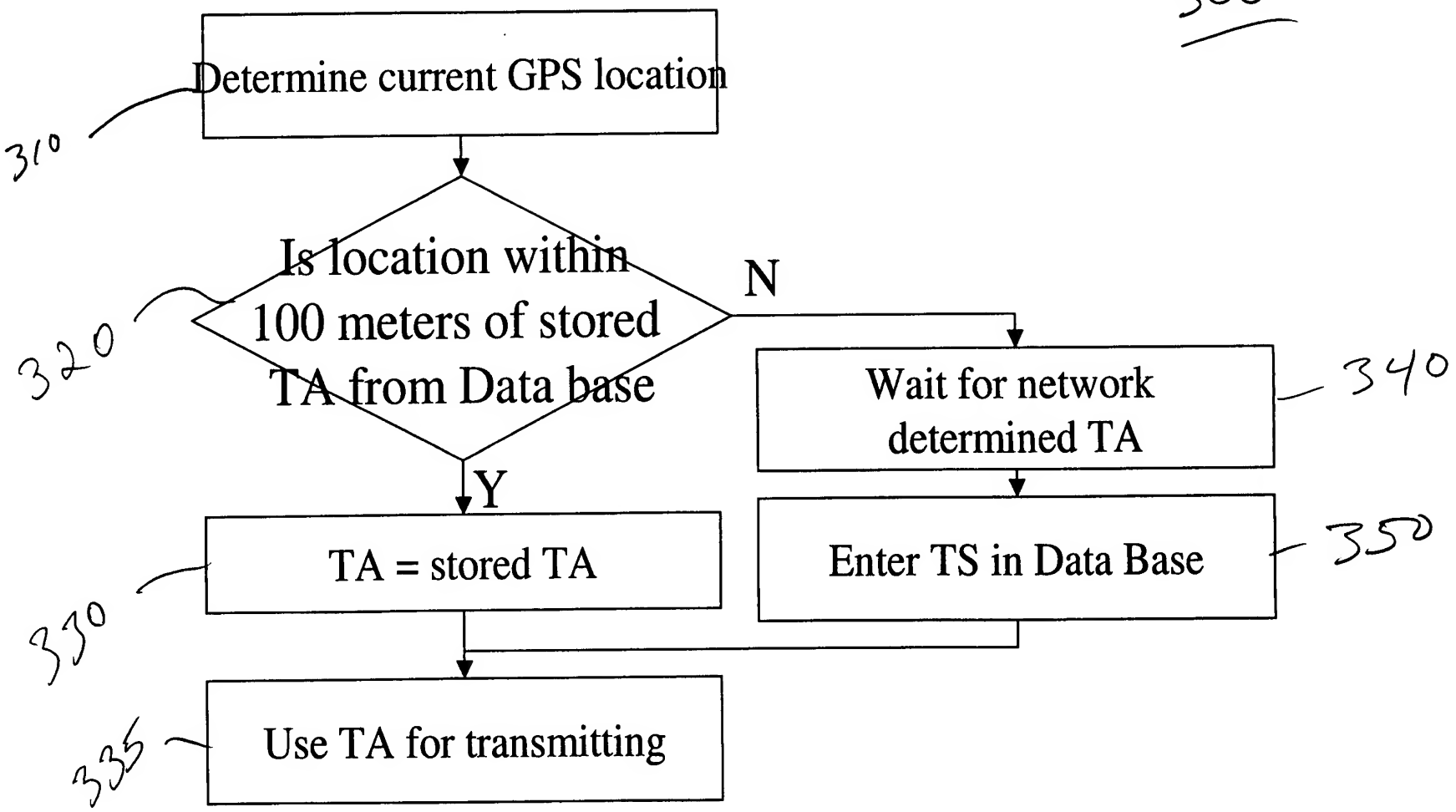

300
Determine current GPS location
310
Is location within 100 meters of stored TA from Data base
320
N
Y
Wait for network determined TA
340
Enter TS in Data Base
350
TA = stored TA
330
Use TA for transmitting
335

FIG 4

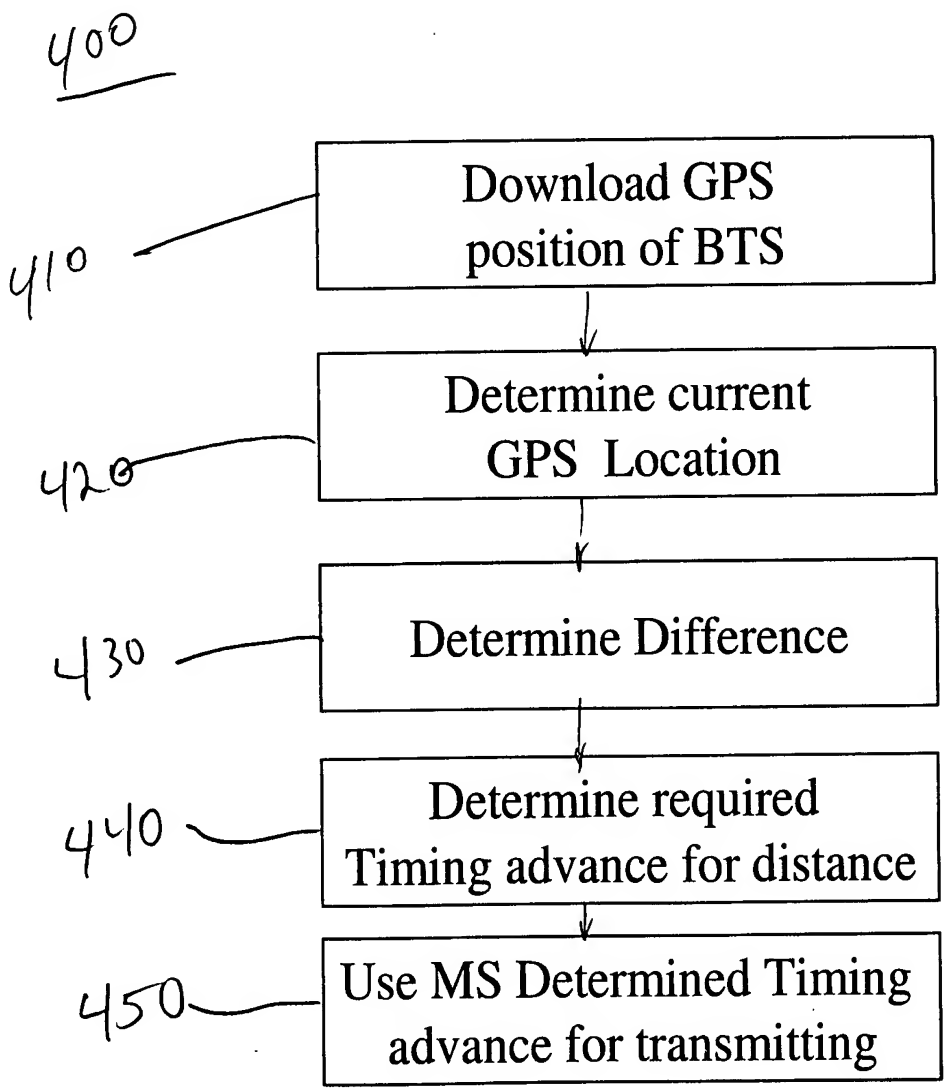

400
Download GPS position of BTS
410
Determine current GPS Location
420
Determine Difference
430
Determine required Timing advance for distance
440
Use MS Determined Timing advance for transmitting
450

FIG 5

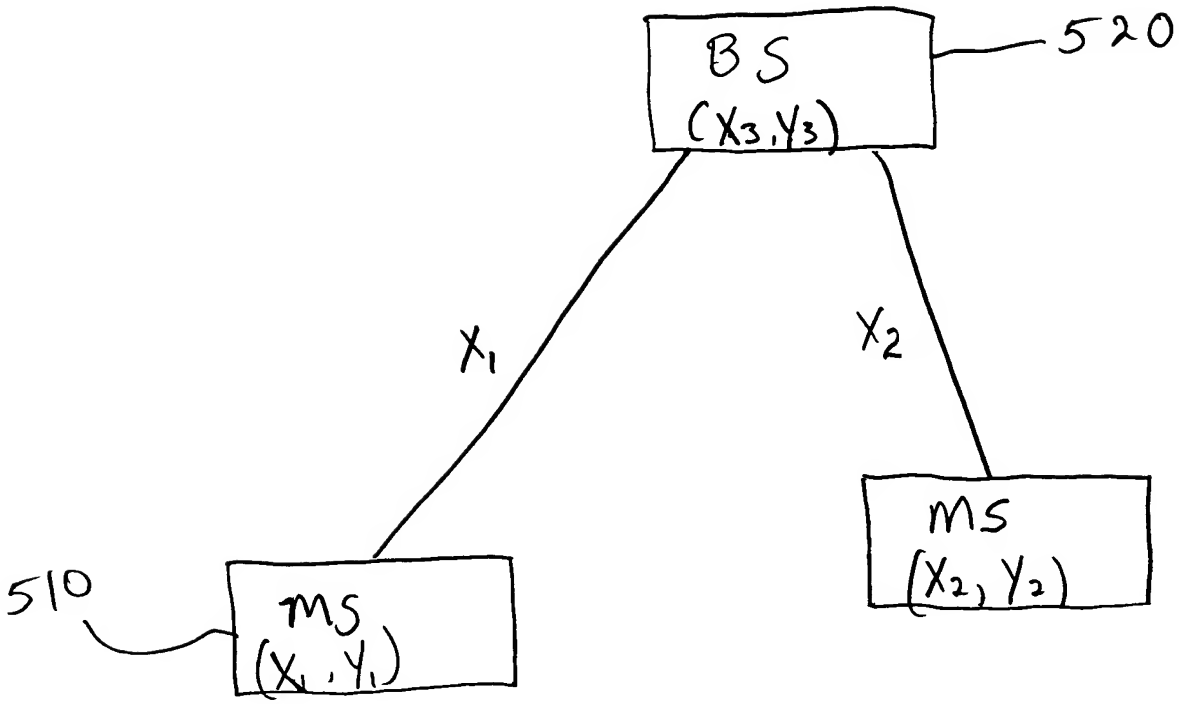


FIG 6

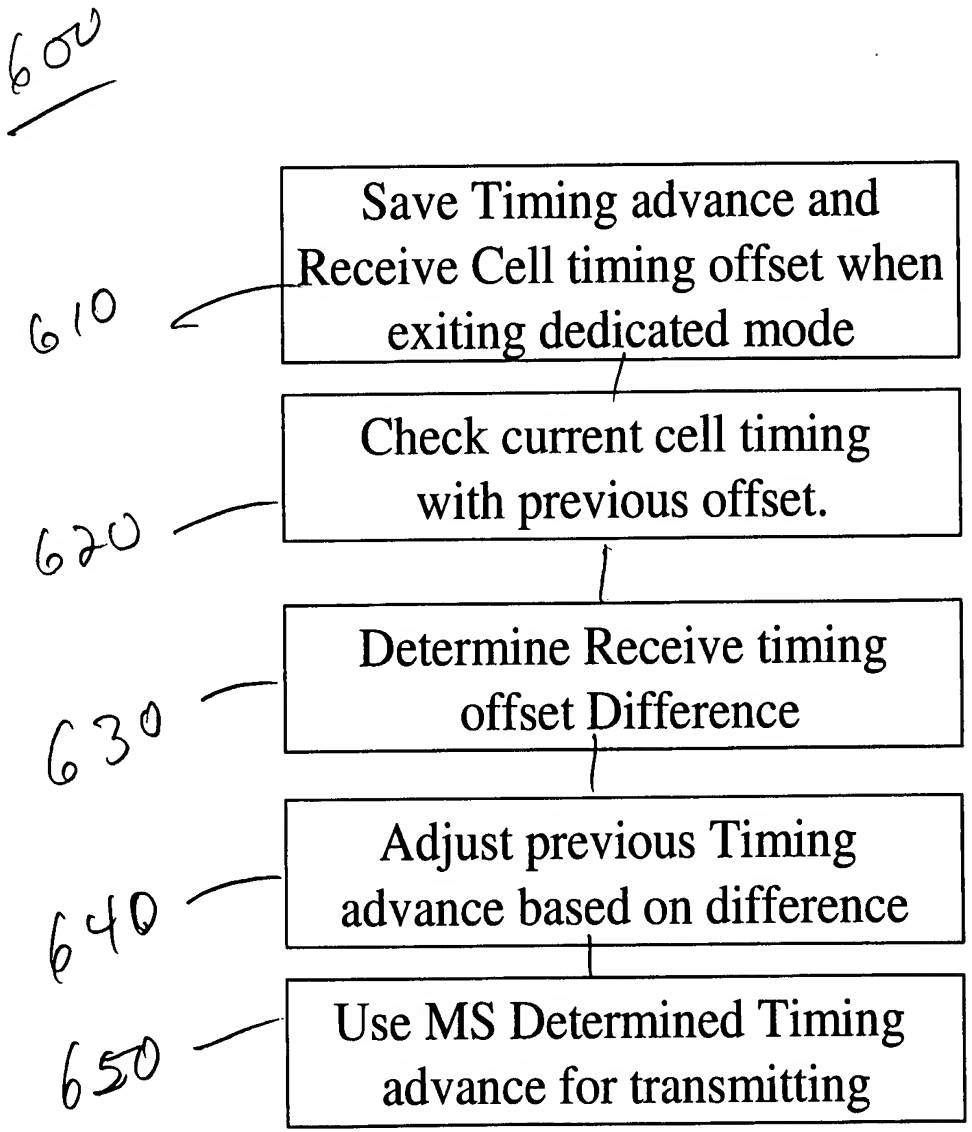

600
Save Timing advance and Receive Cell timing offset when exiting dedicated mode
610
Check current cell timing with previous offset.
620
Determine Receive timing offset Difference
630
Adjust previous Timing advance based on difference
640
Use MS Determined Timing advance for transmitting
650

FIG 7

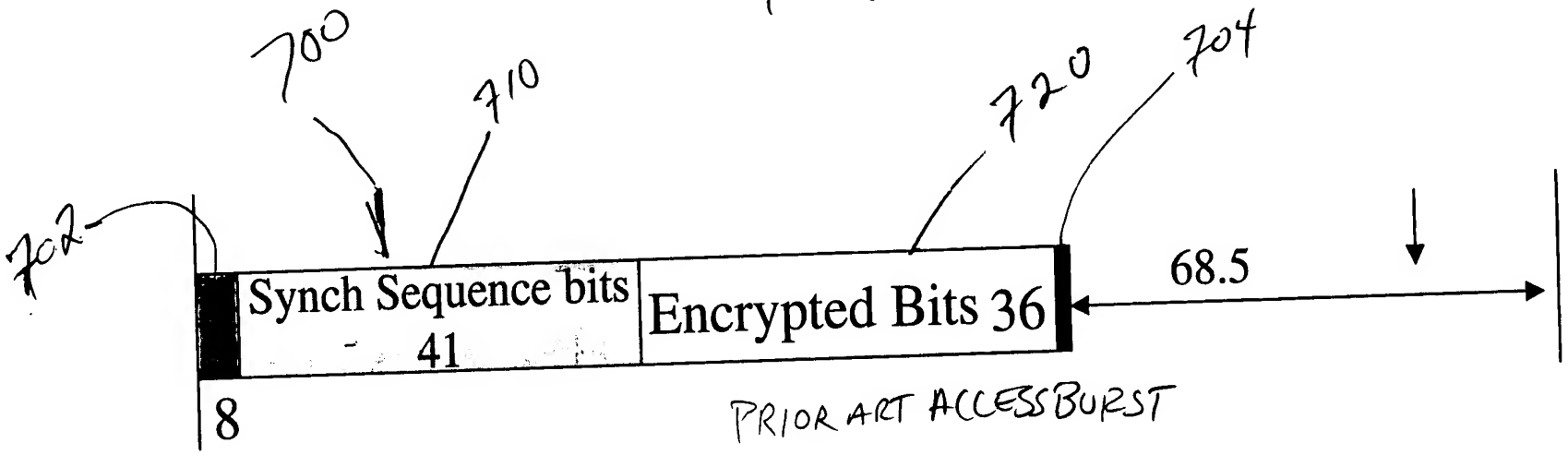

700
710
720
704
702
Synch Sequence bits
41
Encrypted Bits 36
68.5
8
PRIOR ART ACCESS BURST

FIG 8

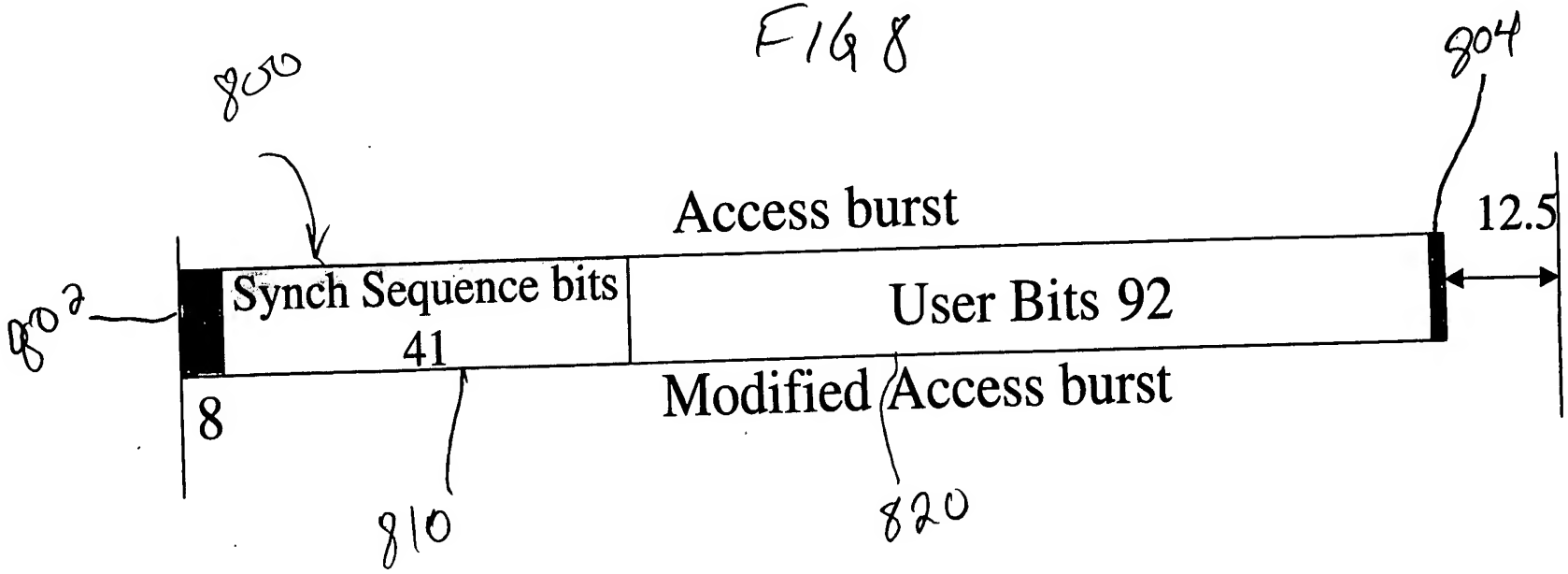

800
804
Access burst
12.5
802
Synch Sequence bits
41
User Bits 92
Modified Access burst
8
810
820

FIG 9

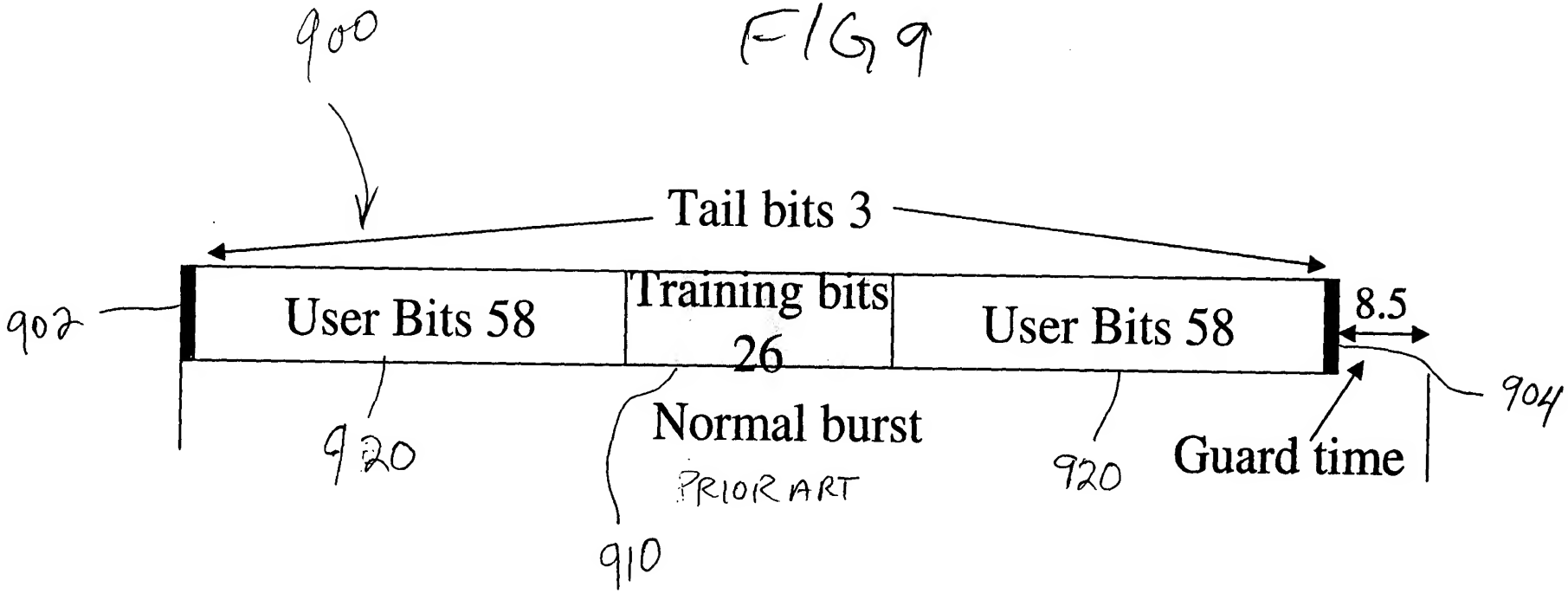
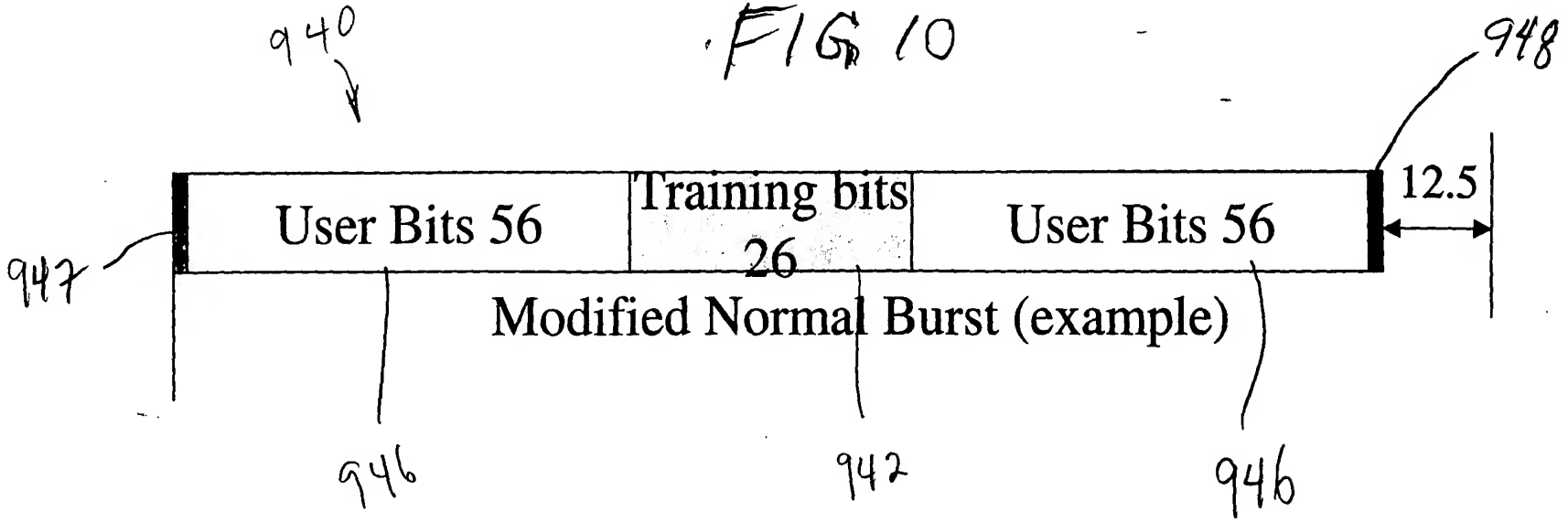

900
Tail bits 3
902
User Bits 58
Training bits 26
User Bits 58
8.5
904
920
Normal burst
PRIOR ART
920
Guard time
910

FIG 10


940
948
User Bits 56
Training bits 26
User Bits 56
12.5
947
Modified Normal Burst (example)
946
942
946